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ABSTRACT

The roles of libraries in providing access to the Internet are still evolving, but such roles raise policy issues that are both significant and complex. A flexible and dynamic policy is needed to respond to the different access needs of various users. Market forces alone will not provide equal access to the Internet, and many public institutions will encounter too many barriers to realize the full potential of the resources and services available over the Internet. Partnerships among and between government and the private sector are essential to increase access to the Internet. Libraries are well-suited to advance the national objectives for the Information Superhighway, and Congressional support for their roles is needed. Results of recent studies suggest that there is a long way to travel before the policy goals of Congress and the Administration are accomplished. Clarifying the policy goals, the roles of the libraries, the role of the public sector, and universal access to the information superhighway are necessary for the achievement of network literacy and usage. Coordinating federal support and replacing rhetoric with program realities are essential to the introduction of new technologies and ways of thinking. An appendix provides a biographical sketch of the author. (Contains 19 references.) (SLD)

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Public Access to the Information Superhighway through the Nation's Libraries

by Charles R. McClure, Ph.D.

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SCHOOL OF INFORMATION STUDIES

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For the

U.S. Congress, House of Representatives
Committee on Science Space and Technology
Subcommittee on Science

October 4, 1994

Hearings on Internet Access

PUBLIC ACCESS TO THE INFORMATION SUPERHIGHWAY THROUGH THE NATION'S LIBRARIES

My name is Charles R. McClure and I am Distinguished Professor of Information Studies at Syracuse University, School of Information Studies. I teach courses in information resources management, federal information policy, and the planning and evaluation of library/information services. In recent years I have conducted a number of studies related to the Internet, the National Research and Education Network (NREN) and the evolving National Information Infrastructure (NII). Attachment A contains additional biographical information and background.

I appreciate the opportunity to provide this statement and regret that due to schedule conflicts I was unable to testify in person. I commend the work of the Chairperson, the committee, and its staff in promoting public debate regarding access, use, and impacts of the Internet. The subcommittee's track record of hearings on topics related to development of the NII, high performance computing, and access to and use of the Internet provide an excellent background for the hearings being held today (for example, Congress, 1993a; Congress 1993b).

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The roles of libraries in providing access to the Internet are still evolving, but such roles raise policy issues that are both significant and complex. Indeed, there has been limited formal investigation and policy research supported by federal agencies regarding these topics -- much more needs to be done. Research being done in this area by a study team at Syracuse University, School of Information Studies does offer, however, a number of findings and recommendations related to libraries and increasing the public's access to the Information Superhighway.

Congress can take a much more active stance in supporting and coordinating policy and program support to enhance the role of libraries in providing public access to the Internet. There are a number of themes that I would like to stress in my statement:

- Access to and use of the Internet is a tool which empowers its users and provides numerous benefits for individuals, communities, and society at large; libraries can serve both as a place of first resort -- a community Internet resource center -- and a place of last resort -- a safety net -- in providing public access to the Internet for the Nation's citizens.

- Library access to and use of the Internet varies widely based on geographic location, type of library, user characteristics, technical infrastructure available, and a range of other factors. A flexible and dynamic policy system is needed to respond to these different access needs.

- Market forces, alone, will not provide equal access to the Internet and many public institutions such as schools, libraries, hospitals, without help, will encounter too many barriers to successfully realize the full potential of the resources and services available over the Internet.

- Partnerships among and between the federal government, the library community, information providers, local and state governments, and other institutions/organizations are essential for increasing access to the Internet.

- The federal government has an important role to play in developing a framework for both policies and programs that supports libraries, and other organizations, which can then provide "equal opportunity" to access and use the Internet.

Libraries are especially well-suited to advance the national objectives for the Information Superhighway identified by Congress and the administration. They are currently breaking a trail for the public's access to and use of the Internet, largely

from limited resources and in a poorly defined federal policy environment. Much can be done to enhance libraries' role in the Information Superhighway so that the citizenry of this country can be empowered in both their professional and personal lives.

This statement provides background to the issues being discussed at this hearing; reviews research results from recent studies conducted at Syracuse University; identifies and describes key issues requiring Congressional attention; and concludes with a number of specific recommendations for Congress to consider related to increasing access to the Internet.

BACKGROUND

President Clinton said in the State the Union Address of January 25, 1994 that "we must work with the private sector to connect every classroom, every clinic, every library [and] every hospital in America into the national information superhighway by the year 2000" (Clinton, 1994, p. 1). The development of the National Information Infrastructure (NII), and the Clinton administration's support for this effort offer the promise of a communications revolution that will affect the very fabric of our society. The National Information Infrastructure: An Agenda for Action (Information Infrastructure Task Force, September, 1993) outlines a view for what the NII might become and describes the Administration's view of principles and objectives that will direct this effort.

In addition, the Information Infrastructure Task Force (IITF) Committee on Applications and Technology noted in a January 25, 1994 policy document (1994a, p. 3), that libraries are one of seven major application areas for initial study, and:

> Providing equitable access is important for many of the applications areas considered. This issue includes access to other individuals and citizen groups via the NII as well as access to information.... For education and for libraries, all teachers and students in K-12 schools and all public libraries -- whether in urban suburban, or rural areas; whether in rich or in poor neighborhoods -- need access to the educational and library services carried on the NII. All commercial establishments and all workers must have equal access to the opportunities for electronic commerce and telecommuting provided by the NII. Finally, all citizens must have equal access to government services provided over the NII.

This policy position -- one that has been supported by this Subcommittee in HR 1757 -- is a key component of the National Information Infrastructure (NII) initiative.

Most recently, the Information Infrastructure Task Force, Committee on Applications and Technology stated that one of the National visions for the NII was to "sustain the role of libraries as agents of democratic and equal access to information" (1994b, p. 1). How these roles evolve, how the private sector, state and local governments, the education community, and libraries can work together to realize these visions, and determining the federal role in promoting these visions are critical concerns. Indeed, the importance of public access to electronic information in a networked environment cannot be underestimated.

Connecting libraries to the NII, in and of itself, may not be the most difficult problem to address -- although it certainly will require careful thought and consideration. Equally important are issues of who will have what type of access to the NII, how to pay for the costs associated with using the network, educating the public on how to use the NII, and developing a range of applications and uses that promote network literacy and enhance our educational system. An understanding of the policy issues affecting the use of the NII and a clarification of the policies that will be needed to promote the use and impact of the NII are needed *in addition to* providing connectivity.

The National Information Infrastructure Act of 1993 (H.R. 1757), which was introduced by this Subcommittee, offers more specific language regarding the role of libraries. Section 305 (b) of H.R. 1757 states that the program will:

> Train teachers, students, librarians, and state and local government personnel in the use of computer networks and the Internet. Training programs for librarians shall be designed to provide skills and training materials needed by librarians to instruct the public in the use of hardware and software for accessing and using computer networks and the Internet.

This bill is important since it includes language supporting universal service, extending the role of libraries and the education community in developing and operating the national network, and promoting the development of networking applications and demonstration projects.

Aspects of H.R. 1757 have (as of August, 1994) been incorporated in S.4, The National Competitiveness Act, which includes a number of national networking initiatives. In addition, H.R. 3636, The National Communications Competition and Information Act, discusses objectives related to connecting libraries to the NII. But how these objectives might be accomplished, what the role of the federal government might be, and how, specifically, librarians might "instruct the public" are unclear at best.

Comprehensive telecommunications reform, however, will not occur in the 103rd Congress. In a statement issued September 23, 1994, Senator Hollings said "the lead co-sponsors of the bill [S. 1822] and I have come to an agreement that there is simply not enough time left in the session to overcome . . . opposition. We are confident that we will be able to take up comprehensive communications reform early next year." Thus, the visions for reform will continue to evolve and be debated in the next Congress.

But as these policy visions for promoting access to and use of the Internet via continue to grow and evolve, there has been an ongoing, and serious, erosion of support for libraries to accomplish the Government's existing policy goals in this area. Congressional action to coordinate policy, program, and research and development initiatives that support library-related efforts that enhance public access to the Internet is needed.

FINDINGS FROM RECENT STUDIES

During the past two years I have led a number of study teams at Syracuse University, School of Information Studies that have been involved in research specifically investigating issues related to the role of libraries in the evolving Internet/NII. These studies include:

- Libraries and the Internet/NREN: Perspectives, Issues, and Challenges (McClure, et. al. 1994a). This book reports on studies related to how different types of libraries are using the Internet and identifies key factors that promote success in developing networked-based library services. The research was funded, in part, by OCLC, Inc., and Mecklermedia Publishers.

- Connecting Rural Public Libraries to the Internet: The Project GAIN Report (McClure, et. al. 1994b). This study, reports on the results of connecting rural public libraries to the Internet and identifies impacts that resulted from having these connections. The research was funded, in part, by NyserNet, the Kaplan Foundation, and Apple Computer Corporation.

- Public Libraries and the Internet: Study Results, Policy Issues, and Recommendations (McClure, et. al., 1994c). This report offers the first national survey data describing public libraries' use and connectivity with the Internet. This survey was funded by the National Commission on Libraries and Information Science,

Copies of these studies have been made available to staff of the Subcommittee. I believe it is important to highlight the following findings from this work.

Limited Connectivity and Public Access

While it can be argued that public library connectivity to the Internet is increasing, only 20% of the Nation's public libraries have some type of connection to the Internet. Further, in only 9% of the public libraries can the public use the connection directly to access information resources and services on the Internet. The vast majority of public libraries and users of those libraries are unable to access the Internet and its information resources and services. Further, a library may have a connection to the Internet but has not obtained adequate training in how to use the connection to enhance its information services to its community.

Data from the study also show that those libraries with connections are using unsophisticated equipment and software. Many libraries that are "connected" have only e-mail capability and are unable to transfer large files, search remote databases, or use new resource discovery tools such as Mosaic. Thus, having a connection does not necessarily equate to that library being able to provide a range of Internet-based services and resources.

Significant Disparities

Some 79% of the Nation's urban libraries (serving populations of 250,000 or more) have some type of connection to the Internet while only 17% of rural libraries (serving populations of 25,000 or less) are connected. In the Nation's Western states, for example, 28% of the public libraries are connected, but in the MidWest, only 15% have connections. Different reasons and barriers can be offered for why such disparities exist -- but it is important to recognize that currently, these disparities do exist.

Additional disparities occur in terms of the amount of resources that are being committed to Internet services by public libraries. Urban libraries are spending, and intend to continue to spend, more on Internet services than their rural counterparts. These findings suggest that the gulf between the "Internet Have" versus "Internet Have-not" public libraries, which already exist, may continue to widen in the future. One cannot conclude, however, that because urban libraries spend more than rural libraries on Internet services that either spends *adequate* resources on such activities.

These findings should *not* be interpreted to mean that urban libraries have solved problems related to obtaining and providing Internet access to their communities. The data suggest that *relatively speaking*, more urban libraries than rural libraries are connected; neither provide much public access to the Internet; and overall, public libraries of both types are unable to commit adequate resources to providing Internet-based services.

Barriers Limiting Access to and Use of the Internet

It is difficult to single out particular barriers that are limiting public library use of the Internet. In fact, a combination of barriers typically affect the library depending on the library's particular circumstances. Our research finds the following factors to be influential in affecting public library involvement in the Internet:

- Costs of connectivity including ongoing telecommunications costs
- Costs to obtain the necessary hardware and software
- Library staff's awareness and knowledge of the Internet
- Lack of internal library technical expertise to identify an appropriate provider, utilize the new computer/telecommunications technologies, and obtain and maintain connectivity
- Level of community interest in having Internet connectivity via the public library
- Level of the library governing board's interest in having Internet connectivity via the public library.

For many rural public libraries, the single most important barrier hindering Internet access may be obtaining an affordable telecommunications link. Project GAIN findings identified wide discrepancies among providers for costs to rural libraries to connect to the Internet. And, costs for *getting* connected differ from costs for *staying* connected to the Internet. For a number of other types of libraries, the key barrier may be the library's management and/or staff's lack of knowledge and/or interest in the Internet.

Inadequate Resource Support

The amount of resources being spent on Internet services by public libraries varies considerably by type and location of library. On average, however, in 1993, public libraries reported an average of $1,591 spent on Internet-related activities per library -- of which only 5.6%, on average, came from federal sources. Multiplying

this number by the number of public libraries in the Nation, 9,050, generates a *guesstimate* of $14,398,550 for total expenditures on Internet-based services through public libraries. Clearly, this amount of resource expenditure is inadequate to accomplish policy goals expressed by Congress and the Executive branch.

In Project Gain, the rural libraries received an initial start-up of equipment valued at approximately $6,000. Additional support from information providers such as OCLC, NyserNet, and a number of publishers of training guides, resulting in an additional pro-rated contribution of some $13,000. Thus, the initial cost for providing start-up computing equipment, connectivity, training, and other types of support was $19,000 per site (McClure et. al., 1994b, pp. 5-7). Costs can be reduced with lower quality equipment and support, but Project Gain shows that *start up* costs of $8,000 - $10,000 are reasonable estimates for equipment, connections, and support for the public library to begin using the Internet.

Despite limited resources, some state libraries have been quite successful in building state-wide networks that support public library access to the Internet. Indeed, one of the most important motivations for many public libraries to get connected to the Internet was the availability of such statewide networks -- especially in rural areas. States such as Maryland and North Carolina (to name a few) have been able to leverage both state resources and oftentimes resources from the Library Services and Construction Act (LSCA) to connect public libraries to the Internet. But overall, the resources available -- at both the local, state, and federal levels, are inadequate for the policy goals at hand.

Significant Impacts Resulting from Connectivity

In those libraries where connectivity to the Internet has occurred, where the library has adequate equipment and can afford the telecommunications charges, and where the staff have been trained in the use and applications of the Internet, there have been significant impacts and benefits. These benefits touch on local economic development, collaboration with local schools, improved learning and interest among students and community members in computing, better delivery of governmental services, and much more (McClure, et. al. 1994b). Other members of this panel will describe these impacts in greater detail.

The evidence from Project GAIN, which I evaluated, shows clearly that rural public librarians, when they have adequate hardware, software, a reliable connection to the Internet, and are trained, will use these resources and will have significant impacts in their community. These impacts typically fall under the headers of:

- Empowering individuals by training or retraining them in uses of new information technologies
- Increasing the global perspectives of community members by connecting them to virtual, geographically dispersed communities around the world.
- Promoting the economic development of the community
- Providing for enhanced local educational infrastructures
- Introducing new information technologies to the local community
- Leveraging the information infrastructure with other institutions to otherwise benefit the community.

Additional detail on these and other impacts are described in our studies. But it is clear that a number of public and academic libraries have had significant impacts on their local communities by establishing Internet-based services.

Formal impact assessments of how Internet use affects local communities. libraries, individuals, and democratic institutions have yet to be done. Federal agencies, such as the National Science Foundation, have spent huge sums on supporting the Internet's technical infrastructure development. But there has been, relatively speaking, very little research support for identifying and measuring impacts resulting from use of the Internet.

KEY ISSUES

Overall, the results from these recent studies suggest that while public libraries are making progress in both being connected and providing Internet-based services to the public, there is much distance yet to travel before the Congress' and Administration's policy goals will be accomplished. A number of the issues that need to be addressed are discussed in length in the studies we have completed. I believe, however, that it is important to highlight some of the issues here.

Clarifying Policy Goals

As previously noted, President Clinton stated that "we must work with the private sector to connect every classroom, every clinic, every library, and every hospital in American to a national information superhighway by the year 2000." How this goal will be accomplished, which federal agencies will provide leadership, and what resources will be committed to realization of the goal is unclear. Throughout a number of these policy statements is an assumed belief that the market, by itself, will work to insure that such connections occur. Numerous examples can be provided where "market forces" do not contribute to connecting schools and libraries.

The President's statement that "we must work with the private sector" to accomplish such goals is laudable but problematic. Clearly, the private sector has been successful in building the national information infrastructure to support the development of the Internet and the evolving NII. Indeed, individual providers can point to specific projects where they have subsidized connecting public sector institutions such as libraries and schools to the Internet. While such efforts are laudable, I do not believe it is the responsibility of these providers to bear all the costs for connecting these public institutions.

Further, the focus on connectivity is fleeting at best. Obtaining a connection to the Internet is "necessary but not sufficient" in the provision of networked-based services. Representative Boucher should be congratulated for the language he proposed in HR 1757 which recognized the need for training and additional types of support for public institutions to provide useful Internet-based services. To what degree does the private sector also have a role in providing training, instructional materials, and other kinds of direct support to public institutions *after* the connectivity has been accomplished?

Public access to the Internet via the Nation's highways is a public good which may require direct support from federal, state, and local governments. Libraries will need support for connectivity, equipment, and training to serve in this role. The federal government can serve in a number of ways to support this role:

- Broker/arbiter: bring together the various stakeholders needed to promote libraries' provision of public access to the Internet.

- Stimulator/experimenter: stimulate on a demonstration basis best practice examples of ways to meet library and community needs in accessing the Internet.

- Guarantor: insure that public access to the Internet through the Nation's libraries, as a public good, is being met.

- Evaluator: assess the successes of various federal programs to identify which efforts should continue to be supported or what new programs are needed.

- Policy Leader: craft the vision, develop policies, and support programs necessary to insure public access to the Internet.

Answers for promoting public access to the Internet and clarifying the roles of libraries in this process will not come from any one segment of society. Rather, the library community, government officials (federal, state, and local), private sector firms, and others must work together -- a key federal role is to encourage such partnering.

Clarifying Library Roles

As a statement of National policy, libraries should be identified as the place of first resort to obtain information, training, and connections to the Internet -- to take advantage of sophisticated new information technologies -- and as a place of last resort, a safety net, where the public can be assured that they have both access to Internet-based information and services, and where they can obtain professional assistance in identifying, locating, and obtaining those resources and services.

The federal government has gone on record that the public deserves better access to and management of electronic government information (National Performance Review, 1993). As a statement of National policy, libraries should serve as the place of last resort where the public can be assured that they have both access to government information as well as obtaining professional assistance in identifying, locating, and using that information as outlined in a recent Office of Technology Assessment report (1993).

The statement that libraries should be *connected* to the information superhighway by the year 2000 begs other issues related to (1) how that connectivity would occur, (2) what benefits such connectivity would provide for the Nation, (3) the degree to which the private sector will directly support such library connectivity and use, and (4) clarifying National roles and priorities for libraries in this networked environment. Additional debate and research will be necessary to answer such questions and encourage partnerships between libraries and the private sector.

The federal government can, as it has done with the development of National educational goals (e.g., "Goals 2000," PL 103-227) state National goals for public access to the Internet. Such goals should describe the role of libraries as outlined above and recognize the importance of promoting information literacy through these libraries and affirm, as public policy, that the provision of public access to the Internet via the Nation's libraries is a public good.

Role of the Private Sector

While the information providers in the private sector certainly can assist the public sector, and especially the library community, to be connected and support public access to the information superhighway, they are not, ultimately responsible for ensuring public access. Ultimately, the Government must be responsible for promoting the "the public good" and insuring that public goods, such as the Information Superhighway, are equally accessible and usable by the public.

Despite the good intentions of some providers, such as Bell Atlantic's support for the Blacksburg electronic village, "enlightened self-interest" alone will not provide sufficient incentives for providers to connect public institutions such as libraries and schools to the information superhighway. Increased competition, meaningful incentives, and a policy and regulatory playing field such as that proposed in S. 1822 can encourage and support private sector initiatives to increase public access to the Information Superhighway.

The primary role of the network providers is to build and maintain a reliable and effective information infrastructure. It is the Government's role to develop policies and establish regulations to promote public access or "universal service." Language such as that in S. 1822 that requires all telecommunications carriers to contribute to a universal service fund which would be administered by the FCC and the states to promote "universal service," is an example of how the Government can "encourage" the private sector to promote public access to the Internet.

The practice of network providers' "cherry picking" profitable network services and geographic locations is detrimental to the policy goals of the Government regarding "equal access to information" (Information Infrastructure Task Force, 1994b, p. 1). A regulatory environment that (1) encourages competition among providers, (2) provides reasonable guidelines for pricing networked-based services, (3) encourages partnerships among the various stakeholders, and (4) re-directs some earnings from profitable services to those that are not profitable, but contribute to the public good, is essential.

What is Universal Service?

Debate should continue to determine what the National policy goals might be regarding universal service in the age of the Information Superhighway. The recent request for comments from the National Telecommunications and Information Administration on this topic, for example, should expand and define this debate (National Telecommunications and Information Administration, 1994a). I would propose, however, that universal service is not, as one provider recently confided to me, "if you've got the money, we've got the service." Indeed, it may be useful to distinguish between universal access to, and universal services from, the information superhighway.

Universal access to the information superhighway implies equal and reasonable opportunity for the individual to be connected to the Internet. But to be "connected to the Information Superhighway," the individual must, minimally:

- Own the necessary computer and telecommunications equipment or have access to it
- Have direct and affordable access to high bandwidth telecommunications link into the information superhighway
- Be knowledgeable enough about the network to use it or be able to obtain assistance from someone who has such knowledge.

That connection may be at home, the office, or at some public institution. The notion here is that regardless of physical location or demographic characteristics, the individual may, if he or she chooses, obtain access to the Internet. But having access to the Internet without knowledge of how to use the Internet is not very useful.

The notion of universal *service*, however, implies some baseline or minimal level of Internet services to which the federal government assures the public it can access and use. For example, the government could assure the public that they are entitled to, minimally, professional assistance in how to use the information superhighway and obtain basic government services via the superhighway.

Existing policy definitions of universal service in S. 1822 are good first steps, but they tend to offer supply side views of universal service rather than demand side (or user-based perspectives). They fail to differentiate between requirements for first providing access, and then, determining what, if any, services should be made

universally available. Furthermore, they often fail to recognize that providing access, say a T1 line to the front door of an elementary school, may still not provide connectivity nor any services into the school because there is insufficient local knowledge as to what to do with that line. Connection to the door does not guarantee effective use of Internet services by the students. National goals related to "connectivity" alone may be short-sighted.

Network Literacy

The skills required to use the "switch hook flash" on one's telephone pale in comparison to the skills and knowledge that are needed to use resources and services on the Information Superhighway. The vast majority of the public has no skills related to using these new communications technologies. Network literacy, the ability to identify, access, and use electronic information from the Information Superhighway and the evolving NII, will be a critical skill for tomorrow's citizens if they wish to be productive and effective in both their personal and professional lives (McClure, 1993).

There is an educational disconnect between the rapidly developing communications technologies and information resources available to the public, and the public's ability to use these resources. An elite few, typically academics, researchers, technology enthusiasts, and "network junkies," are network literate. The September, 1994 issue of PC World (p. 30), reported that households with incomes of $50,000 or more are five times more likely to own a PC and 10 times more likely to have access to online services. In a survey of college graduates with children, 49% had PCs, compared to 17% of homes in which the parents had only high school diplomas.

Preliminary data from the Bureau of the Census, with the assistance of the Center for Community Networking supports these findings and offers additional insights as to the demographics of who does and does not have access to home computing and online services (Civille, 1994). The gulf between the network literate and those who are not continues to widen.

Will the networked society result in excluding a range of services and opportunities to those who are unable, for whatever reason, to move to the networked environment? Who will be responsible for educating people to use the networking technologies and take advantage of the wealth of resources currently available and yet to be developed? How will the public participate in decision making about technology applications that will affect the fabric of their society if they are network illiterate?

How we address and resolve these issues will have a significant impact on how society evolves, how notions of literacy and a literate society evolve, and the degree to which social equity can be enhanced in the United States. The country must develop strategies to develop the Information Superhighway as a vehicle for (1) "reconnecting" different segments in our society, (2) promoting a network literate population to ensure a social equity, and (3) enhancing the role of libraries and the education community to accomplish these objectives.

Uncoordinated Federal Support to Libraries

Increasingly, the list of agencies and their responsibilities vis a vis support for libraries to provide Internet-based services is unwieldy and complex. Key federal players in this arena include (but are not limited to):

- The National Telecommunications and Information Administration (NTIA): currently administers a $26 million program "Telecommunications and Information Infrastructure Assistance Program" (TIIAP) which offers competitive grants for public projects related to Internet development -- some of which may support libraries.

- The Department of Education (DOE): has a raft of programs and services that could support libraries' development onto the Internet; these result from the Library Services and Construction Act (LSCA), the Elementary School Education Act (ESEA), and the Higher Education Act (HEA) -- to name but a few.

- The National Aeronautics and Space Administration (NASA): recently awarded $20 million to 15 organizations to develop technology and applications for putting earth science data on the Internet.

- The National Science Foundation (NSF): offers a large number of programs, most recently awarding some $25 million for their digital libraries projects, from which libraries might apply for grants and awards to promote the development of Internet services.

- The Government Printing Office (GPO): in its administration of the Depository Library Program, supports the dissemination of electronic government information to some 1400 libraries.

In addition, other federal agencies have developed programs intended to support libraries' access to and use of electronic information such as the National Technical Information Service's (NTIS) FedWorld. The national libraries -- the Library of Congress, the National Library of Medicine, and the National Agriculture Library -- have programs and roles in this area. Still others, such as the National Commission on Libraries and Information Science (NCLIS), the Information Infrastructure Task Force (IITF), or the Federal Communications Commission (FCC) provide regulatory or advisory functions related to libraries and the Internet.

This lack of coordination has resulted in conflicting program goals and objectives, reducing the overall effectiveness of the limited resources available to support library development onto the information superhighway, creating artificial walls between and among programs, i.e., stovepipe programs at the local level which are poorly coordinated, and confuse both the federal and the library community as to what programs are appropriate for what types of libraries in particular circumstances. Further, many of the programs are competitive grants in which many libraries are, for a host of reasons, unable to compete successfully against other applicants.

Policy Rhetoric versus Program Realities

The public statements by President Clinton, Vice President Al Gore, and others in the Administration regarding the role of libraries in the Internet are very positive and encouraging. Recently, for example, Assistant Secretary of Commerce, Larry Irving stated (1994, pp. 4-5):

> One of the most important things that has happened with regard to universal service was when the Vice President and President latched onto the idea of hooking up every library, classroom, hospital, and clinic by the year 2000. *That is the safety net for a lot of people* [emphasis added]. . . . If I want to make sure that every citizen has access to it [the information superhighway], I have to get it into public institutions.

Indeed, these public institutions will be the safety net for access, but a closer look at federal program support to achieve these goals, at least from the library perspective, is not encouraging.

For example, for FY 1995 the Administration requested no funds for the Higher Education Act (HEA) Title II which deals with college library technology, library research and demonstration, and library education -- to name but a few areas. The Administration's request for FY 1995 funding of Library Services and Construction

Act -- the mainstay by which many state libraries are supporting statewide networking initiatives -- was $26 million less than the 1994 appropriation at only $102 million. To date, Congressional committees have proposed restoration of some of these appropriations.

As another example, Vice President Gore recently visited the July 29, 1994 meeting of the National Commission on Libraries and Information Science (NCLIS) and stated (1994, p. 1-2), upon receiving the report Public Libraries and the Internet: Study Results, Policy Issues, and Recommendations (McClure et. al. 1994c):

> But there must be a concerted effort to ask the questions and to inventory the challenges and to come up with the best answers [related to the information superhighway]. There is a whole collection of those questions that has to do with the role of libraries. Copyright, telecommunication, connections, costs, technology, all kinds of stuff. This group [NCLIS] could play an enormously important role in helping the country answer those questions. [NCLIS should] ask those questions, inventory those challenges and respond to the questions that involve libraries' roles in the information superhighway.

Meanwhile, the Administration requested $901,000 for FY 1995 for NCLIS, down from NCLIS' 1994 appropriation of $903,000 -- which is inadequate for dealing with the issues and tasks at hand.

The federal programs related to supporting libraries and the Internet/NII are seriously inadequate, and recent Administration proposals have eroded those programs even more. The argument that the new NTIA TIIAP of $26 million will significantly benefit libraries is unclear -- at least in the short term (see below). The bottom line here is:

- Federal program support for libraries to accomplish National policy goals related to libraries' access to and use of the information superhighway are woefully inadequate.

- Program support for library connectivity is necessary but not sufficient; as Representative Boucher has proposed in HR 1757, support for training and applications development is also essential.

- Federal programs must be better coordinated both among Federal agencies and with state and local programs; they should support community-based solutions where schools, libraries, local government, and other organizations network together for Internet access and services rather than relying on stovepipe solutions, i.e., each unit doing its "own thing."

- An overhaul of LSCA, HEA, and other library programs in agencies such as NSF needs to be accomplished in light of National policy goals, libraries' existing involvement in the information superhighway, and the development of the NII.

While the policy goals related to libraries and the Internet are laudable -- as described in the "Libraries" section of Putting the Information Infrastructure to Work (Information Infrastructure Task Force, 1994b), the distance between rhetoric and actual federal program support in this policy area is significant.

INCREASING ACCESS TO THE INTERNET

Given existing Congressional and Administration policy goals to increase the public's access to the Internet, a number of strategies should be considered. Indeed, the federal policy and program framework to accomplish this goal will need to be flexible, evolutionary, and to some degree, experimental. The following are strategies for enhancing libraries' ability to increase public access to the Internet. They represent a range of opportunities for Congressional action.

Clarify Policy on Role of Libraries

Simply stated, is it National policy for libraries to serve as the access point of last resort to the Internet? Is it National policy for public libraries to serve as the safety net by which all members of the public have equal opportunity to access and use Internet resources and services and to obtain basic training in using the Internet? The National policy goal of "connecting libraries to the Internet by the year 2000" does not clarify the *role* that public libraries should play in a National networked information society. Nor does it clarify who, or what, exactly will serve as the access point of last resort and the public's safety net.

Traditional roles for public libraries in terms of preserving equal access to information for all the public support these new roles of the library as a community-based resource center that provides a range of Internet services and training for *both* the information haves and have-nots. As our recent studies suggest, many libraries are attempting to move into these new roles on the information superhighway. This transition, however, requires a range of support at the federal, state, and local level, and it would operate move effectively in the context of clear national policy regarding the role of public libraries in the networked society.

Policy can support and encourage libraries to develop partners and collaborate with other organizations to obtain resources necessary for Internet services. Clearly, the federal government, alone, cannot provide the resources needed. Indeed, "success stories" from a number of state library agencies demonstrate a wide range of techniques that can be used to leverage federal monies to obtain additional resources from local governments, foundations, and the private sector.

Continue and Expand Existing Programs

With some modifications, programs such as that currently being operated by NTIA should be continued and expanded. An NTIA preliminary analysis of the applications for the $26 million TIIAP showed that some $562 million had been requested. Of that $562 only $18 million were categorized as "library" based programs applications -- recognizing that libraries could have a component in other programs not formally categorized as "library" (NTIA, 1994b). We will not know actual awards until later this Fall. But, the relatively low level for library-based program applications can be explained, in part, by:

- The complexity of the applications procedures and the inability of many library organizations to marshall the necessary resources simply to propose a project meeting applications guidelines.
- Lack of knowledge about the NTIA program since traditionally, library program support has come from the Department of Education.
- The need for many libraries to request relatively small grants to promote their "readiness" to get connected to the Internet and learn how best to use networked information and services as part of their normal programming.

But in the near term the NTIA program, in and of itself, may not provide the level of support needed for libraries to transition into the information superhighway.

Nonetheless, the idea behind the NTIA program is a good one. That is, the grants are demand-based; they require collaboration and cost sharing at the local level; and they are competitive. With the likelihood of this program growing to $64 million for next fiscal year, NTIA should be encouraged to modify the overall program by:

- Drastically simplifying the applications procedures overall, and for public organizations and institutions with annual budgets of, say, less than $5 million allowing a "Quick Response Proposal" of five pages or less as the application form.

- Initiating an "Internet Readiness" program of one time only grants of, say $10,000 for public organizations and institutions with annual budgets of less than $5 million to purchase connectivity, equipment, and training. The grant would have to be matched, to some degree, with new monies from the local community.

- Publicizing the grants programs better to the public sector (especially the library community), offering training and/or information sessions about the program, and provide better lead time between announcement and application deadline.

Similar recommendations may be appropriate for the programs offered by the Department of Education and NSF related to libraries. Since the Science Subcommittee has oversight for NSF, it may be appropriate to inventory the programs that offer library support, review the applications to and awards from the programs, and determine how well they are meeting stated policy goals related to public access to the Internet.

The HEA, LSCA, and ESEA programs administered by the Department of Education target, respectively, higher education, public libraries, and schools. These programs can be better coordinated to encourage local schools, libraries, and educational institutions to work together, to leverage their resources on community based solutions to networking. The marginal cost for adding additional school or public libraries to a local area network that is then connected to the Internet is minimal -- as opposed to that school developing its own connection and infrastructure.

I would be pleased to discuss additional details of assessing the various federal funding approaches with Subcommittee staff. But, unless additional steps are taken, to simplify, publicize, and coordinate these programs, the library community -- as well as a host of other public organizations and institutions -- is not likely to receive adequate support from these programs.

Organize and Coordinate Federal Support for Libraries

The mish-mash of agencies and their programs involved in supporting libraries' transition to and use of the Internet to enhance public access is confusing at best. A number of strategies should be undertaken in this area:

- A lead agency or task group should be specifically designated to coordinate library programs related to the Internet and the NII. A group within the National Economic Council, the Information Infrastructure Task Force, the Department of Education, or perhaps an agency such as NTIA might take on this responsibility.

- The National Commission on Libraries and Information Science should be directed to develop a coordinated National plan defining the federal government's role in supporting library connections to and uses of the Information Superhighway.

- The National Commission, or perhaps another agency, should be directed to coordinate the collection and dissemination of descriptive data regarding the uses and applications of the Internet by libraries; national surveys such as the one we completed, Public Libraries and the Internet (McClure, et. al., 1994c), must be continued annually and for all types of libraries.

- Finally, we need an annual report that provides an agency "crosscut" of all programs supporting libraries in the Internet/NII providing program name, objectives, general description, budget, and activities.

A beginning model for the second strategy is the publication published by the Office of Science and Technology and the NSF, "Grand Challenges 1993: High Performance Computing and Communications." This annual report identified which agencies had what programs, with what budgets that were part of the HPCC initiative. A similar effort needs to be done for the NII initiative, overall, and more specifically, for library programs related to the Internet/NII.

Currently, there is considerable discussion about re-vamping the Library Services and Construction Act to better meet the needs of libraries in the networked society. I would propose that emphasis should not be on Construction, but rather Communications, and would rename this program to the Library Services and *Communications* Act with goals such as:

- Provide direct support for libraries to obtain basic computing and telecommunications equipment.

- Provide support for librarians and information professionals to obtain education and training related to the use of the Internet/NII and the development of network-based services.

- Help libraries obtain electronic government information that provide the public with access to this information.

- Support a National network literacy program in which librarians assume the responsibility of preparing the public to be productive and empowered in the networked society.

- Establish libraries as community-based network access centers that ensure and protect every person's access to networked information resources.

- Provide direct support to early innovators and successful experimental projects (such as those being done at Seattle Public Library) to diffuse the knowledge gained to other libraries.

- Promote the development of statewide networks.

- Evaluate "best practices" of the provision of networked information and conduct research related to libraries in the networked information environment.

LSCA, however, is but one component of the National policy supporting the library infrastructure. For example, the recently established National Education Goals, "Goals 2000" (P.L. 103-227) and programs such as the Internet-based AskEric service (ERIC Clearinghouse on Information and Technology, 1994), which provides Internet-based national reference and referral for educational information, should be carefully coordinated with library programs.

In addition, specific programs from the NSF intended for library development, Internet connectivity, or other networking support for libraries are unclear. Exactly what those programs are, the amounts available, and the library community's awareness of such programs requires additional investigation. Indeed, the degree to which the NSF directly supports the National policy goals related to libraries with specific programs and funds should be clarified.

A comprehensive review of other federal policies and programs affecting *libraries should be conducted to identify ambiguities, gaps, problems, or conflicts.* To develop a National plan for libraries to serve in the roles envisioned by Congress, we must first identify and coordinate the existing policy context in this policy area. The plan should address the coordination of federal, state, local and private initiatives relating library programs to the Internet/NII. NCLIS should be supported to coordinate the development of this plan.

Need for a Flexible and Dynamic Policy and Program Structure

Libraries cannot be easily generalized in terms of their use of the Internet and their sophistication with networking. Some libraries, such as Seattle Public Library, have innovative Internet-based library services and provide the public with direct access to the Internet. Other libraries have no connection and are relatively uninformed about the Internet. Some libraries have excellent local telecommunications infrastructure, others do not.

Thus, the policy and program structure to promote library Internet access needs to provide different types of support for libraries in different types of situations. For example:

- Readiness support: assisting the library to "get ready" to connect to the information superhighway by increasing the library's awareness of what it is, why it is important, and how it might actually connect to and use it.

- Access support: this includes support to obtain and install the necessary equipment and software as well as, perhaps, support for telecommunications charges.

- Applications support: assistance here could include training, support for curriculum development and learning modules, instruction on how to provide Internet-based programs and services, working with other local organizations to meet community needs, etc.

Clearly, program and policy support must also come from the state and the local community. While there can be program incentives that encourage libraries to get connected and provide public access, demand-based approaches, i.e., where local communities, individuals, or other public institutions request funds, such as those used in the NTIA program should be encouraged.

ACCEPTING THE CHALLENGE

The federal government, alone, cannot connect libraries to the Information Superhighway, promote network literacy, insure the public's access to electronic government information, and increase public access to the Internet via the Nation's libraries. It can, however, provide incentives and offer a range of encouragements where the library community, the public, state and local communities, and the private sector work together toward the policy goal of connecting libraries to the Internet and providing enhanced public access to the Internet via our libraries.

Currently, there is no coordinated National plan or policy to accomplish the Administration's policy goals in this area. How the federal government will support the development of libraries in (1) connecting to the Information Superhighway, (2) serving as the source of last resort or as a safety net to insure public access to the Information Superhighway, and (3) transitioning to an electronic, digital, and networked environment.

One vision of the Information Superhighway is to have libraries all connected to the national network. The library would be a community resource center for:

- Introducing new information technologies to the community
- Demonstrating applications and uses of networking
- Providing training to community residents on how to use the Internet
- Promoting collaboration among schools, local governments, and other community groups to use the Information Superhighway.

The library can also serve as a safety net, a place of last resort to access and use the Information Superhighway. Any person could access the array of information resources and services simply by using the "network room" in the library. Students could work interactively on lessons, adult learners could tap into endless instructional tools and persons, equal access to all types of information -- especially government information -- would be made possible.

Electronic resources or all types and forms would be publicly available for those who cannot connect from the home or workplace. Librarians and educators would serve as electronic intermediaries, navigators, and instructors -- being actively involved in assisting people best use the network. Parents, students, adult learners, educators and others could work interactively and inter-dependently on projects

and activities that we can only begin to imagine now. The library, as a non-partisan, publicly supported institution, with strong local community ties, is well-suited to serve in this role.

In a recent op-ed in the New York Times, Krugman notes that in the long run, technological advancements can be good for almost everyone. But in the short term, these changes strongly favor the most highly skilled and educated segments of society. He warns that such growing disparities can trigger social crisis as income gaps widen and certain segments of the population perceive themselves as chronically underemployed (Krugman, 1994). These gaps can occur just as easily within the existing middle class as in lower income segments. A major role for libraries and the larger education community in the networked society is to insure that these gaps are minimized and that equal opportunity to networked services and resources are available to the public.

The challenge before Congress and the Administration is to develop such a plan and implement programs that accomplish the plan's objectives. I look forward to working with this Subcommittee and other federal agencies to develop such a plan and to realize the Congressional goals of connecting libraries to the Internet and to enhance public access to the Information Superhighway.

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APPENDIX A

Dr. Charles R. McClure <cmcclure@suvm.acs.syr.edu> is Distinguished Professor at the School of Information Studies, Syracuse University, Syracuse, NY 13244 (315-443-2911). He teaches courses in U.S. government information management and policies, information resources management, library/information center management, research methods, and planning/evaluation of information services.

He completed his Ph.D. in Library and Information Services from Rutgers University. He is a member and has held a number of elective and committee positions, in the American Society for Information Science, the American Library Association, the Information Industry Association, and the Association for Library and Information Science Educators.

He has written extensively on topics related to U. S. government information, information resources management (IRM), and information policy including the co-authored works Federal Information Policies in the 1980's: Conflicts and Issues (Ablex, 1987); and Public Access to Government Information, Second edition (Ablex, 1988), and The National Research and Education Network (NREN): Research and Policy Issues (Ablex, 1991)

He has served as the principal investigator for studies related to the management of government information and information policy, by agencies such as the U.S. Congress Office of Technology Assessment, the National Technical Information Service, the Bureau of the Census, and the National Science Foundation. He was the principal investigator of a study, completed in January, 1993, funded by the Office of Technology Assessment, entitled Federal Information Policy and Management for Electronic Service Delivery. In June, 1994, he completed a national survey, Public Libraries and the Internet, on the use of the Internet by public libraries, funded and published by the National Commission on Libraries and Information Science.

His research funded by The U.S. Office of Management and Budget produced Identifying and Describing Government Information Inventory Locator Systems: Design for Networked-Based Locators (Washington, DC: National Audio-Visual Center, 1992). Funding from the U.S. Geological Survey supported the 1994 project resulting in the report Expanding Research and Development on the NISO Z39.50 Search and Retrieval Standard for the Government Information Locator System (GILS).

He also has conducted research on library management topics. He served as the principal investigator for the Public Library Development Project, funded by the Public Library Association, which resulted in the 1987 ALA publication of Planning and Role Setting for Public Libraries and Output Measures for Public Libraries, (2nd ed.), both of which McClure is a co-author. He continued research in this area with the publication of the 1991 report Development of a Planning, Service Roles, and Performance Measures Manual for Academic Health Science Libraries, (available through ERIC) funded by the Association of Academic Health Sciences Library Directors.

Some of his other works related to library management and services include the monographs Performance Measures for Academic and Research Libraries (Chicago: ALA, 1990) and Evaluation and Library Decision making (Ablex, 1990). He also completed the co-edited book Library and Information Science Research: Perspectives and Strategies for Improvement (Ablex, 1991). His most recent book is Libraries and the Internet/NREN: Perspectives, Issues, and Opportunities (Meckler, 1994). He has authored/edited some 30 monographs and more than 200 reports and articles.

His research has won national awards from the American Library Association, the Association of Library and Information Science Education, and the American Society for Information Science. His co-authored study Federal Information Policies in the 1980s: Issues and Conflicts (Ablex, 1987) was recognized by the American Society for Information Science as the best book in information science for 1988. His co-authored study, Electronic Networks, the Research Process, and Scholarly Communication: An Empirical Study with Policy Recommendations for the National Research and Education Network, received the Jesse H. Shera award for the best research study in library/information science for 1990 -- the third time that he has won that award.

Currently, McClure is funded by the National Science Foundation to study "Policy Issues in Assessing the Role of the Public Libraries in the NII," and from the U.S. Department of Education to investigate "Assessing the Impacts of the Internet/NREN Networking on the Academic Institution." Both projects are scheduled for completion in 1995. McClure also serves as Associate Editor of Government Information Quarterly and is the founding Editor of Internet Research: Electronic Networking Applications and Policy.

In 1994 he was named "Distinguished Professor" at Syracuse University, only one of eight ever to receive that honor. He was named by the National Commission on Libraries and Information Science as "Distinguished Researcher" in 1993. As president of Information Management Consultant Services, Inc., he consults with a number of academic, public, and special libraries; government agencies; professional associations; networks and electronic service providers; and corporations regarding the design, implementation, management, and evaluation of information services. He is a frequent speaker at professional meetings and conferences.